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ABSTRACT

Two studies investigated whether Japanese college students (as educated adult readers) and fifth-graders (novices after having learned about 640 "kanji") would use, either consciously or not, one of the compounding rules for kanji to understand a compound word. Subjects in the first study were two groups of fifth-graders (49 in each) and two groups of college students (45 and 46). All were given one of two versions of a test in which they were required to: (1) select appropriate compounds for given sentences; and (2) guess the meaning of novel kanji. Results were analyzed for evidence of differentiation of meaning by the order of component kanji, inaccuracies and their sources, and differences between older and younger subjects. In the second study, 9 of each fifth-grade group and 12 of each college-age group explained their choices on the earlier test. None stated that they referred to a general compounding rule, but many did use a form-specific rule. Older readers referred most often to analogy alone, and younger readers most often did not refer to either rule or analogy in understanding compound words. (MSE)

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# Use of a Compounding Rule in Inferring the Meaning of Unfamiliar Kanji Compound Words*

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Students have to learn a lot of new vocabulary. Anderson and Nagy (in press) have pointed out that for enhancement of students' vocabulary growth repeated experiences of inferring the meaning of unfamiliar words during reading texts are important. In this inferential process, in addition to content and context cues, some linguistic knowledge might be used. For example, Nagy and Scott (1990) have demonstrated that experienced readers of English have word schema knowledge, by which they can recognize and evaluate hypotheses about new words.

In the Japanese language there are a huge number of compound words consisting of two or more kanji. Nomura and Ishii (1988) list about 65,000 compound words, most of which are such combinations. These compound words will thus occupy a large proportion among the new words students learn. It is well known that experienced readers of Japanese can infer the meaning of unfamiliar words using component kanji as cues (Hatano, 1986; Hatano et al., 1981). In addition, they probably use as constraints rules for compounding kanji, which are parallel to "compounding rules" in English studied by Gleitman and Gleitman (1970) and Geer et al. (1972).

In this study we examined whether college students (as

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representatives of expert or educated adult readers) and 5th-graders (novice readers after having learned about 640 kanji by the end of grade 4) would use, consciously or not, one of the compounding rules as a constraint. More specifically, the students were presented compound words consisting of two kanji, each representing a noun. A general compounding rule for such compound words, except for those consisting of two nouns belonging to the same class, can be expressed as "the last kanji represents a class of which the referent of the word is a member; the first kanji characterizes or qualifies the nature of the referent." For example, 牛乳 (cow milk) stands for cow's milk, whereas 乳牛 (milk cow) is a cow for milking.

To exclude the possibility of subjects' already knowing the meaning of the target word and closely related words, we introduced an artificial kanji as a component.

Study 1

College students and 5th-graders were asked to select the proper words (from the differently ordered pairs) for given meanings, and also to guess the meanings of compound words, using a paper-and-pencil test (Selection Task and Guessing Task). The college students were also asked to write reasons for their choices in the Selection Task. (1) We examined whether students would differentiate meanings according to different orders of two kanji in compound words. (2) We also analyzed error rates, and possible reasons for erroneous responses for "hard" items. (3) Responses of the college students and the 5th-graders were compared to assess developmental changes.





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Method

Two comparable groups of 5th-graders (49 each) and of college students (45 and 46) were given one of two versions of the test. First, all students were given an artificial kanji "馬" (M below stands for this kanji), its meaning (an animal which is like a horse and important in daily life in a fictitious community), and its pronunciation (ma:). They were also given the information that the use of kanji in the community was the same as in Japan, with two examples (consisting of two kanji representing a combination of a verb and a noun or two adjectives).

On the Selection Task the students read six sentences each including a blank for the target word preceded by its paraphrased expression. They were required to choose one from among two alternative compound words. Both words consisted of the artificial kanji and a familiar kanji that represented a noun, but in different orders. An example is "In fishing, we caught (  ), a fish which had color similar to M's. (1. M fish, 2. fish M)." College students were required to write reasons for their choices, too. In four of the six sentences the correct answers for the two versions were different only in the order of the same two kanji: For example:

| | paraphrase | compound word |
|---|---|---|
| version 1 | milk of M | M milk |
| version 2 | M for milking | milk M |

The two versions had one common item (the above "fish" item), and another in which the correct compound word was the same, though



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it stood for a different referent (the "carriage" item to be described below). (For other items, see Table 1.)

The Guessing Task consisted of two sentences each including a novel compound word (consisting of the artificial kanji and a familiar kanji that represented a noun). The students were required to guess the meanings of the novel words. The two versions were different in the order of the two kanji, as shown below:

In a market, "M meat" (or "meat M") was sold.

On a trip, we saw "M sea" (or "sea M").

Results and Discussion

Differentiation of meaning by the order of component kanji.

Percentages correct on the Selection and Guessing Tasks are shown in Table 1. Responses to pairs of compound words sharing the same kanji were analyzed to examine whether they differed significantly according to the order of the two kanji. Except for the "grass" item in Selection and "meat" item in Guessing among the 5th-graders, all items revealed a statistically significant differentiation in the response distribution due to the order. In other words, even the 5th-graders could differentiate meanings according to the order of component kanji, though this does not necessarily mean that they were relying on a general rule.

Inaccuracies and their sources.

However, their inferred meanings were not always correct nor consistent with the compounding rule. Even the college students showed a percentage correct below 90 for five items: "grass M", "power M", and "M carriage" in Selection ; "meat M" and "sea M"

in Guessing. Selecting "grass M" for "a toy M made of grass" was hard, because (a) the "grass M" is not a member of the class of "real M", but is a toy, and (b) any toy animal made of grass is not familiar to the students.

On "power M" for "M with strong power", 15 of the 20 students who made an error wrote such reasons as: they had remembered the word "horsepower" and replaced the horse with M. The other four students had remembered the word "human power", "magic power" etc. Thus, it seems that, when they did not think of an proper analogous word, they were tempted to rely on a word having the same component kanji as the analogous word but in the reverse order.

On "M carriage" for "a carriage which transports only M", 16 of the 35 students who chose correctly wrote that they had remembered the word "horse carriage" and/or "cow carriage". (The other 8 students had remembered the word representing the other kinds of carriage or car.) However, 8 of the 11 students who made the incorrect choice also wrote that they had remembered the same words and had reversed the order, because they "knew" that the word they remembered should stand for a carriage which is pulled by a horse (or cow), not a carriage which transports horses. In this case the same analogy led to both correct and incorrect answers.

On the Guessing Task a surprisingly low percentage of the students gave the correct meaning for "meat M" (See Table 1). Almost all errors were the meaning corresponding to "M meat" instead. This seems due to (a) that cow meat, horse meat, etc. are

more salient than meat cow, meat horse, etc., and (b) that the context was more favorable to "M meat" than to "meat M".

Comparison of responses by the college students and the 5th-graders

On the Selection Task, except for 2 items the college students showed reliably higher frequencies of correct choices than the 5th-graders. (See Table 1.) On the Guessing Task, for both items the college students made proper guesses more frequently than the 5th-graders. Performances improved from the 5th-graders to the college students.

## Study 2

Using an interview with 5th-graders and college students, we examined whether they would refer to the compounding rule for justifying their choices.

### Method

Nine each of both groups of the 5th-graders in Study 1, and another two groups of college students (12 each) were required to explain their choices in the Selection Task to an interviewer. Their reasons for the correct choices were classified into three categories: (a) referring to a compounding rule, (b) analogy from a similar word alone and (c) not referring to either a rule or analogy.

### Results and discussion

Unable to state the rule.

Only the stated reasons for correct choices were analyzed (See Table 2). No students stated the general compounding rule in an abstract form and responded to all items correctly.

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Some of them referred to a rule which was general for the kind of the target and related words (e.g. "In names of mountains, kanji 'mountain' usually comes in the last position"). Though the college students referred to a rule more frequently than the 5th-graders, they did so only in less than half cases.

From the interview of the college students, the following "strategies" were suggested: At first trying to recall similar words, applying analogies, and checking the choice by "rules"; using rules only when not being able to recall any similar words; relying on "feeling" of the word without analyses.

## Conclusion

Whereas even "novices" can constrain the process of inferring the meaning of compound words by the order of the component kanji, "experts" may not have grasped than the compounding rule consciously, nor do they always apply . Their responses are often analogy-based and are thus vulnerable to err.

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## References


Anderson, R. C., & Nagy, W. E. (in press). Word Meanings. In Handbook of Reading Research (2nd ed.).

Geer, S. E. & Gleitman, H. (1972). Paraphrasing and remembering compound words. Journal of Verbal Learning and Verbal Behavior, 11, 348-355.

Gleitman, L. R., & Gleitman, H. (1970). Phrase and paraphrase: Some innovative uses of language. New York: W. W. Norton.

Hatano, G. (1986). How do Japanese children learn to read?: Orthographic and eco-cultural variables. In B. R. Foorman & A. W. Siegel (Eds.), Acquisition of reading skills: Cultural constraints and cognitive universals (pp. 81-114). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Hatano, G., Kuhara, K., & Akiyama, M. (1981). Kanji help readers of Japanese infer the meaning of unfamiliar words. The Quarterly Newsletter of the Laboratory of Comparative Human Cognition, 3(2), 30-33.

Nagy, W., & Scott, J. (1990) Word schemas: Expectations about the form and meaning of new words. Cognition and Instruction, 7(2), 105-127.

Nomura, M. & Ishii, M. (1988). (A list of compounded technical terms.) Technical Report available from the authors.

Table 1 Percentages correct on the Selection and Guessing Tasks

| | College n=45 or 46 | Grade 5 n=49 | Differences |
|---|---|---|---|
| Correct word | The Selection Task | | |
| M fish | 93% | 81% | ** |
| M milk | 100% | 71% | *** |
| milk M | 96% | 65% | *** |
| M grass | 98% | 67% | *** |
| grass M | 84% | 49% | *** |
| M power | 100% | 73% | *** |
| power M | 56% | 51% | --- |
| M mountain | 100% | 78% | *** |
| mountain M | 100% | 63% | *** |
| M carriage | 98% | 86% | * |
| M carriage | 76% | 80% | --- |
| Novel word | The Guessing Task | | |
| M meat | 100% | 92% | --- |
| meat M | 35% | 14% | * |
| M sea | 91% | 65% | ** |
| sea M | 84% | 76% | -- |

Notes. M stands for 馬 .
* $p < .05$, ** $p < .01$, *** $p < .001$ for $\chi^2$ test.
No. of subjects for "M fish" were 91 and 98, respectively.

Table 2 The stated reasons for correct choices

(both versions combined)

| | College n = 124 | Grade 5 n = 83 |
|---|---|---|
| Refer to a rule | 40% | 27% |
| Refer to analogy alone | 53% | 24% |
| Not refer to either | 7% | 49% |

Note. n stands for the number of correct choices.